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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Richard Axel and Kristin Scott
U.S. Serial No. : 10/081,816
Filed : February 22, 2002
For : CHEMOSENSORY GENE FAMILY ENCODING
GUSTATORY AND OLFACTORY RECEPTORS AND
USES THEREOF

#7
B.9.9
9/18/02

1185 Avenue of the Americas
New York, New York 10036
June 10, 2002

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Information Disclosure Statement
Under 37 C.F.R. §1.97(b)(3)

In accordance with their duty of disclosure under 37 C.F.R. § 1.56, applicants would like to direct the Examiner's attention to the following references which are listed on the attached Form PTO-1449 (**Exhibit A**) and copies of which are attached hereto as **Exhibits 1-45**:

1. PCT International Publication No. WO 00/43410, published July 27, 2000 (**Exhibit 1**);
2. PCT International Publication No. WO 00/77208, published December 21, 2000 (**Exhibit 2**);
3. Ben-Arie, N., Lancet, D., Taylor, C., Kehn, M., Walker, N., Ledbetter, D.H., Carrozzo, R., Patel, K., Sheer, D., Lehrach, H., and et al., (1994) Olfactory receptor gene cluster on human chromosome 17: possible duplication of an ancestral receptor repertoire. Hum. Mol. Genet. 3: 229-235

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(Exhibit 3);

4. Bowie, James U., Reidhaar-Olson, J.F. (1990) Deciphering the message in protein sequences: tolerance to amino acid substitutions. Science 247: 1306-1310 (Exhibit 4);
5. Buck, L. and Axel, R. (1991) A novel multigene family may encode odorant receptors: a molecular basis for odor recognition. Cell. 65: 175-187 (Exhibit 5);
6. Chandrashekar, J. et al (2002) T2Rs Function as Bitter Taste Receptors. Cell 100: 703-711 (Exhibit 6);
7. Chaudhari, N. et al (2000) A Metabotropic Glutamate Receptor Variant Functions as a Taste Receptor. Nature neuroscience 3,2: 113-119 (Exhibit 7);
8. Clyne, Peter J. et al (2000) Candidate Taste Receptors in Drosophila. Science 287: 1830-1834 (Exhibit 8);
9. Clyne, Peter J. et al (1999) A Novel Family of Divergent Seven-Transmembrane Proteins: Candidate Odorant Receptors in Drosophila. Neuron 22: 327-338 (Exhibit 9);
10. Dahanukar, A. et al (2001) A Gr Receptor is Required for Response to the Sugar Trehalose in Taste Neurons of Drosophila. Nature neuroscience 4,12: 1182-1186 (Exhibit 10);
11. Doe, C. Q., and Skeath, J.B. (1996) Neurogenesis in the insect central nervous system. Curr.Opin. Neurobiol. 6:18-24 (Exhibit 11);

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12. Dulac, Catherine et al (1995) A Novel Family of Genes Encloding Putative Pheromones Receptors in Mammals. Cell 83: 195-206 (Exhibit 12);
13. Dunipace, L. et al (2001) Spatially Restricted Expression of Candidate Taste Receptors in the Drosophila Gustatory System. Current Boiology 11: 822-835 (Exhibit 13);
14. Faber, T., Joerges, J., and Menzel, R. (1998) Associative learning modifies neural representations of in the insect brain. Nature Neurosci. 2: 74-78 (Exhibit 14);
15. Gao, Q. et al. (July 1999) Identification of candidate olfactory receptors from genomic DNA sequence. Genomics 60: 31-39 (Exhibit 15);
16. Gimelbrandt, A.A. et al. (February 1999) Truncation releases olfactory receptors from endoplasmic reticulum of heterologous cells. J. Neurochem. 72(6): 2301-2311 (Exhibit 16);
17. Grillenzoni, N., van Helden, J., Dambly-Chaudiere, C., and Ghysen, A. (1998) The iroquois complex controls the somatotopy of Drosophila notum mechanosensory projections. Development 125: 3563-3569 (Exhibit 17);
18. Herrada, G., and Dulac, C. (1997) A novel family of putative pheromone receptors in mammals with a topographically organized and sexually dimorphic distribution. Cell 90:763-773 (Exhibit 18);

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19. Hoon, Mark A. et al (1999) Putative Mammalian Taste Receptors: A Class of Taste-Specific GPCRs with Distinct Topographic Selectivity. *Cell* 96: 541-551 (Exhibit 19);
20. Ishimoto, Hiroshi et al (2000) Molecular Identification of a Taste Receptor Gene for Trehalose in *Drosophila*. *Science* 289: 116-119 (Exhibit 20);
21. Kim, M. S., Repp, A., and Smith, D.P. (1998) LUSH odorant-binding protein mediates chemosensory responses to alcohols in *Drosophila melanogaster*. *Genetics* 150: 711-721 (Exhibit 21);
22. Levy, N.S., Bakalyar, H.A., and Reed, R.R. (1991) Signal transduction in olfactory neurons. *J. Steroid Biochem. Mol. Biol.* 39: 633-637 (Exhibit 22);
23. Malnic, B. et al (1999) Combinatorial Receptor Codes for Odors. *Cell* 96: 713-723 (Exhibit 23);
24. Matsunami, H., and Buck, L. B. (1997) A multigene family encoding a diverse array of putative pheromone receptors in mammals. *Cell* 90: 775-784 (Exhibit 24);
25. Matsunami, H. et al (2000) A Family of Candidate Taste Receptors in Human and Mouse. *Nature* 404: 601-604 (Exhibit 25);
26. Mckenna, M.P., Hekmat-Scafe, D.S., Gaines, P., and Carlson, J.R. (1994) Putative *Drosophila* pheromone-binding proteins expressed in a subregion of the olfactory system. *J. Biol. Chem.* 269:16340-16347 (Exhibit 26);

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27. Merritt, D. J., and Whittington, P.M. (1995) Central projections of sensory neurons in the *Drosophila* embryo correlate with sensory modality, soma position, and proneural gene function. *J. Neurosci.* 15:1755-1767 (Exhibit 27);
28. Mitchell, B. K. et al (1999) Peripheral and Central Structures Involved in Insect Gustation. *Microscopy Research and Technique* 47: 401-415 (Exhibit 28);
29. Montmayeur, J. et al (2001) A Candidate Taste Receptor Gene Near a Sweet Taste Locus. *Nature neuroscience* 4,5: 492-498 (Exhibit 29);
30. Nelson, G. et al (2001) Mammalian Sweet Taste Receptors. *Cell* 106: 381-390 (Exhibit 30);
31. Ngai, J. et al (1993) The Family of Genes Encoding Odorant Receptors in the Channel Catfish. *Cell* 72: 657-666 (Exhibit 31);
32. Ngo, J.T., Marks, J., Karplus, M. (1994) Computational Complexity, Protein Structure Prediction, and the Levinthal Paradox. In: Merz, K. Jr. and Le Grand, S. (Eds) *The Protein Folding Problem and Tertiary Structure*, Chapter 14, pp 492-495, Birkhäuser, Boston (Exhibit 32);
33. Parmentier, M., Libert, F., Schurmans, S., Schiffmann, S., Lefort, A., Eggericks, D., Ledent, C., Molleareau, C., Gerard, D., and et al. (1992) Expression of members of the putative olfactory receptor gene family in mammalian germ cells. *Nature*, 355:453-455 (Exhibit 33);

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34. Pelosi, P. (1994) Odorant-binding proteins. Crit. Rev. Biochem. Mol. Biol. 29: 199-228 (Exhibit 34);
35. Pikielny, C.W., Hasan, G., Rouyer, F., and Rosbash, M. (1994) Members of a family of Drosophila putative odorant-binding proteins are expressed in different subsets of olfactory hairs. Neuron. 12: 35-49 (Exhibit 35);
36. Robertson, H. M. (1998) Two large families of chemoreceptor genes in the nematodes *Caenorhabditis elegans* and *Caenorhabditis briggsae* reveal extensive gene duplication, diversification, movement, and intron loss. Genome Res. 8:449-463 (Exhibit 36);
37. Ryba, N.J., and Tirindelli, R. (1997) A new multigene family of putative pheromone receptors. Neuron 19: 371-379 (Exhibit 37);
38. Singh, R. N. (1997) Neurobiology of the Gustatory Systems of Drosophila and Some Terrestrial Insects. Microscopy Research and Technique 39: 547-563 (Exhibit 38);
39. Stocker, R.F. (1994) The organization of the chemosensory system in *Drosophila melanogaster*: a review. Cell Tissue Res. 275: 3-26 (Exhibit 39);
40. Talluri, S. et al (1995) Identification of a Drosophila G Protein α Subunit ($dG_q\alpha-3$) Expressed in Chemosensory Cells and Central Neurons. Proc. Natl. Acad. Sci. USA 92: 11475-11479 (Exhibit 40);

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41. Troemel, E.R., Chou, J. H., Dwyer, N.D., Colbert, H. A., and Bargmann, C.I. (1995) Divergent seven transmembrane receptors are candidate chemosensory receptors in *C. elegans*. *Cell*. 83: 207-218 (Exhibit 41);
42. Ueno, K. et al (2001) Trehalose Sensitivity in *Drosophila* Correlates with Mutations in and Expression of the gustatory Receptor Gene Gr5a. *Current Biology* 11: 1451-1455 (Exhibit 42);
43. Vosshall, L. et al (1999) A Spatial Map of Olfactory Receptor Expression in the *Drosophila* Antenna. *Cell* 96: 725-736 (Exhibit 43);
44. Vosshall, L. et al (2000) An Olfactory Sensory Map in the Fly Brain. *Cell* 102: 147-159 (Exhibit 44); and
45. Wells, J.A. (1990) Additivity of mutational effects in proteins. *Biochemistry* 29:8509-8517 (Exhibit 45).

If a telephone interview would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the number provided below.

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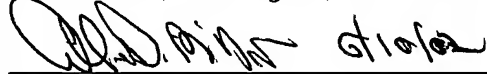
Applicants are filing this Information Disclosure Statement under 37 C.F.R §1.97(b) (3) before the mailing of a first Office Action on the merits. Accordingly, no fee is deemed necessary in connection with the filing of this Information Disclosure Statement. However, if a fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully Submitted,



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Alan D. Miller
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New York, New York 10036
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I hereby certify that this correspondence is being deposited this date with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.



Alan D. Miller
Reg. No. 42,889

Date

Form PTO-1449		U.S. Department of Commerce Patent and Trademark Office			Atty. Docket No. 64019-A JPW/ADM		Serial No. 10/081,816					
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)					Applicants Richard Axel and Kristin Scott							
					Filing Date February 22, 2002		Group Art Unit					
U.S. PATENT DOCUMENTS												
Examiner Initial		Document Number				Date	Name	Class	Subclass	Filing Date if Appropriate		
FOREIGN PATENT DOCUMENTS												
		Document Number				Date	Country	Class	Subclass	Translation		
										Yes	No	
		0	0	4	3	4	1	0	7/27/00	PCT		
		0	0	7	7	2	0	8	12/21/00			
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)												
		Ben-Arie, N., Lancet, D., Taylor, C., Kehn, M., Walker, N., Ledbetter, D.H., Carrozzo, R., Patel, K., Sheer, D., Lehrach, H., and et al., (1994) Olfactory receptor gene cluster on human chromosome 17: possible duplication of an ancestral receptor repertoire. Hum. Mol. Genet. 3: 229-235.										
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EXAMINER						DATE CONSIDERED						
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		Robertson, H. M. (1998) Two large families of chemoreceptor genes in the nematodes Caenorhabditis elegans and Caenorhabditis briggsae reveal extensive gene duplication, diversification, movement, and intron loss. Genome Res. 8:449-463.					
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		Singh, R. N. (1997) Neurobiology of the Gustatory Systems of Drosophila and Some Terrestrial Insects. Microscopy Research and Technique 39: 547-563.					
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